Developing a Respondent Friendly Survey in a Busy World – Time Does Matter

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Introduction

- Most of the cost associated with a random-digit-dial survey is reaching the selected respondent.
- Many states are lengthening their Behavioral Risk Factor Survey by adding more questions so that they get the most out of their funds.
- Many items add to the length of the survey:
  - The number of questions asked.
  - Question complexity.
  - The proportion of respondents that is older.
  - Time of year.
  - The interviewer, whether s/he read through the questions slow or fast.
- The first two are items that Behavioral Risk Factor Surveillance System (BRFSS) Coordinators can control and the third item will change when BRFSS data is collected multi-mode (residential phones, cellular phones, mail, web, etc.).

Objectives

- To learn how to optimize the length of the BRFSS while reducing respondent burden and maintaining data quality.
- To calculate the question equivalency of a survey by hand.

Methods

- The 2005 Texas BRFSS was first analyzed as four distinct surveys:
  - January/February: Included required influenza questions and excluded Cardiovascular Health (CH) Module and Heart Attack & Stroke Awareness (HASA) Module.
  - March-August: Excluded influenza questions and added CH and HASA Modules.
  - September/October: Added one question for a pilot study.
  - November/December: Added hurricane assessment questions.
- Time was calculated as time_at_end – time_at_beginning.
- Suspended interviews showed only times at the last attempt.
- Interviews were capped at 90 minutes.
- Data were analyzed in SPSS (v13.0).
- Only completed interviews (disposition code 110) were analyzed because partial interviews would not reflect the interview time for the whole survey. In addition, on average, it was taking these respondents about twice as long to answer a question than those who completed the full questionnaire (21.9 seconds/question vs. 12.4 seconds/question). This is probably due to the interviewer trying to keep these respondents on the phone to get a partial complete.
- Data were not weighted to the state population because the results should represent those who are answering the questions. The distribution of the respondents is different than the distribution of the state population.

Calculating Question Equivalents (QE)

Since most questions are not asked of every single respondent, it is important to understand how many questions in a section are being asked on average.

Example: Tobacco Use

Q1: Have you smoked at least 100 cigarettes in your entire life?

This question is asked to all respondents. **QE=1**

Q2: Do you now smoke cigarettes every day, some days, or not at all?

This question is only asked of those who answer "Yes" to Q1. About 42.5% of Texas respondents answer "Yes to Q1" and get to answer Q2. **QE=0.425**

Q3: During the past 12 months, have you stopped smoking one day or longer because you were trying to quit smoking?

This question is only asked of those who respond "Every day" or "Some days" to Q2. Nearly 18.0% of Texas respondents are asked this question. **QE=0.18**

Actual Number of Questions for Tobacco Use: 3

Number of QEs for Tobacco Use Questions in Texas (Hand Calculated): 1.6

Median Number of Tobacco Use Questions Asked in Texas (from SPSS): 2

Results

Figure 1: Total Number of Questions, Number of Question Equivalents, and Median # of Questions Asked by Survey Version 2005 Texas BRFSS

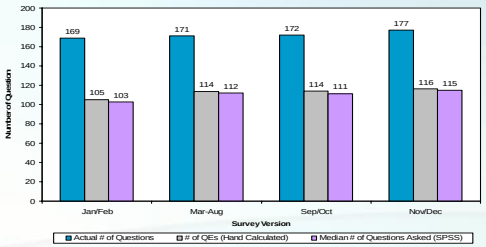


Figure 1: Hand calculations were one to three questions higher than the median number SPSS calculated. On average, respondents answered between 60.5%- 65.0% of all survey questions.

Figure 2: Actual Number of Survey Questions and Median Number of Questions Asked by Survey Version 2005 Texas BRFSS

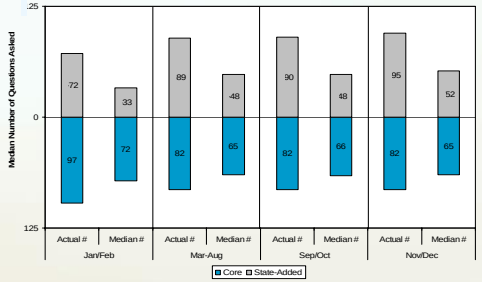


Figure 2: To accommodate the 15 additional influenza questions in January and February 2005, Texas had to exclude the CH and HASA modules for those two months. For November and December, Texas also included five questions to assess the impact of Hurricanes Katrina and Rita, but did not exclude any previous questions asked on the survey. Texas added 72-95 state-added questions in which the median number of questions asked was about half of them in 2005. The minimum number of state-added questions asked was 17 questions and the maximum number was 78 questions.

Figure 5: The respondent's education level plays an important role to survey length. Even though those who had less than a high school education were asked fewer questions on average, it took these respondents longer to complete the whole survey than any other education level.

There was a high correlation between age group and education level. Nearly every three out of ten respondents (30.3%) with less than a high school education were above the age of 64 years. When this analysis was repeated excluding 65+ year olds, a similar pattern as in Figure 5 was noted.

Figure 3: Survey Length by Survey Version 2005 Texas BRFSS

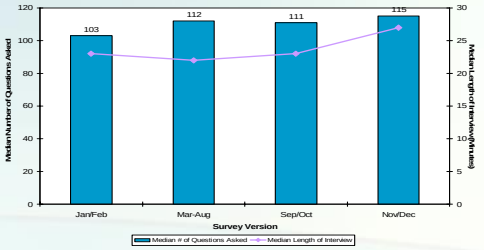


Figure 3: Although the survey administered in January and February had the fewest questions answered, the median length of interview was similar to that of the surveys in March through August, and September and October. This may indicate that the extra questions in January and February were either too long and/or too complicated.

The median length of interview was expected to be slightly longer (24 minutes) in November and December because five questions were added, but instead the median was 27 minutes. The additional length may have been due to the holiday season.

Figure 4: Survey Length by Age Group 2005 Texas BRFSS

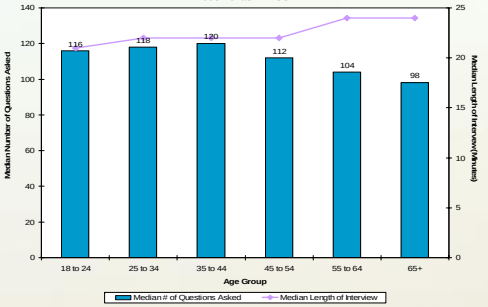
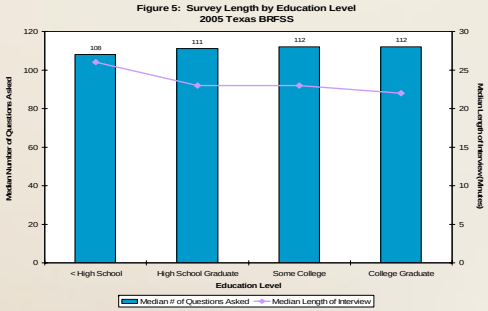


Figure 4: The median number of questions asked decreases with age, from 120 questions among those 35 to 44 year olds to 98 questions among those aged 65 years or older. The median length of interview increased with age, from 21 minutes among those aged 18-24 years to 24 minutes among those aged 55 years or older. The median time it took to answer one question increased by age as well; 10.9 seconds per question for those aged 18-24 years to 14.7 seconds for those aged 65+ years.

Figure 5: Survey Length by Education Level 2005 Texas BRFSS



Facts

- A total of 9.6% of the 2005 Texas BRFSS respondents were partial completes. There was a higher percentage of partially completed interviews in February (14.7%) and November (13.6%).
- Over half of the partial completes in Texas occurred by the end of the core instrument (5.4%).
- There was a higher percentage of partial completes among those with less than a high school education (14.2%) when compared to those who were a high school graduate (10.5%), had some college education (7.8%), or were a college graduate (7.4%).
- Although it was taking 65+ year olds a longer time to answer each question (14.7 seconds per question), most of these respondents completed the interview (91.3%).
- Young respondents with less than a high school education were most likely not to complete the survey.
- If the CH and HASA modules were added to the January and February survey, the survey length would have been, on average, 2.8 minutes longer for a total survey length of 25.8 minutes. This assumes that the each CH and HASA question was asked the average time per question; this was 12 seconds per question in March-August.
- On average, the 15 influenza questions added 1.1 minutes to the survey length. The median number of influenza questions asked was 5 questions and each survey question took about 13.3 seconds to answer in January and February.

Recommendations

- There are two main survey costs: reaching a respondent and the length of interview. Each state needs to balance the two.
- Keep questions simple and to-the-point.
- Know your respondents. Are they young or old? Well educated or not?
- Recognize that not all questions are going to be asked of the same types of people. Younger people may get more state-added questions concerning alcohol and tobacco use while older people will get more state-added questions concerning their diabetes or last heart attack.
- If your state has a high number of respondents who are older, keep a lower number of state-added questions that the older respondents are asked. This will help decrease overall interview time.
- Data quality would improve if more younger respondents completed the survey. This could be done by conducting BRFSS interviews by cellular phones, websites, and mailed instruments.
- Keep well-trained interviewers. The January and February interviews in Texas may have taken longer for fewer questions to be asked due to it being a new survey instrument.
- Monitor interviews, especially in January, to determine if certain questions are not running smoothly.
- If the number of proposed question equivalents exceeds the number your BRFSS program wants to add, try doing a split survey to keep the number of partial completes low. The 2007 Texas BRFSS had nearly 75 question equivalents proposed, so Texas is doing a four-way split in which all questions are asked on at least half of the sample.
- Adding more state-added questions to your state BRFSS will allow your BRFSS program to tap into new partnerships, increase the surveillance system's annual sample size, and expand the topic areas covered.

Thanks

- Macro International, Inc. for creating a length of interview dataset for this analysis.
- Bruce Steiner, M.S., the Illinois BRFSS Coordinator, who gave me the idea of presenting the concept of question equivalents to other coordinators.